

Appl. No. 10/005,210  
Reply to Office Action of June 5, 2003

REMARKS/ARGUMENTS

Reconsideration is respectfully requested in view of the above amendments and the following remarks.

Claim 1 is amended to recite that input characteristics of the converter are determined, and are used to determine the maximum power point. This is supported by the disclosure, for example at page 8, lines 7-11. Therein, it is disclosed that equations for input characteristics - the input resistance and the voltage stress in the exemplary arrangement described - are utilized to determine the maximum power point.

Claim 4 is amended similarly to recite means for using the input characteristics to determine the maximum power point. This also is supported by the disclosure, for example as shown in Figure 4, which illustrates an arrangement for determining input resistance and voltage stress of the converter.

Claims 1-7 also are amended herein for formal reasons.

New claim 8 is added to recite that the input characteristics used to determine the maximum power point include the maximum variation in the input voltage and the voltage stress of the switching device. This is supported by the disclosure, for example at page 14, line 22 through page 15, line 2. New claim 10 is added similarly to recite means for determining those input characteristics. This also is supported by the disclosure, for example as shown in Figure 4.

New claim 9 is added to recite that the input characteristics used to determine the maximum power point include the maximum variation in the input voltage and the average value of the input voltage of the switching device. This is supported by the disclosure, for example at page 23, lines 8-10. New claim 11 is added similarly to recite means for determining those input characteristics. This also is supported by the disclosure, for example as shown in Figure 14.

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Claims 1-11 are pending in the application. No new matter has been added.

In the Office Action, claims 1-6 are rejected under 35 U.S.C. § 102(b) as being anticipated by Midya et al. (U.S. Patent No. 5,801,519). Applicants respectfully traverse the rejection.

Claim 1 of the present invention recites introducing a perturbation into a switching parameter of a pulsedwidth modulated converter between a solar panel and a load, and determining the maximum power point based on input characteristics of the converter. Claim 4 recites an apparatus with similar features.

The rejection characterizes Midya as disclosing every feature of claims 1 and 4. Applicants respectfully disagree.

In particular, the rejection characterizes the Midya as disclosing the introduction of a perturbation into a switching parameter of a converter. However, even if this characterization is correct, which point Applicants do not concede, Midya does not disclose or suggest determining the maximum power point based on input characteristics of the converter.

Rather, Midya functions by introducing a perturbation, then determining the rate of power change (power derivative) caused by that perturbation. Based on the power derivative, Midya determines the maximum power point. Applicants reference for example column 6, lines 19-20 with respect to the invention of Midya, and column 4, lines 5-22 with regard to approaches described as known by Midya.

Applicants note that in contrast with the input characteristic based approach of the present invention, a power derivative based approach as in Midya has certain limitations, as described for example at page 2, line 16 through page 3, line 13 of the present application.

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Midya is exclusively directed to identifying a maximum power point based on a power derivative. Midya nowhere discloses or even suggests determining a maximum power point based on input characteristics of a converter.

As the present invention according to claims 1 and 4 includes features neither disclosed nor suggested by Midya, Applicants respectfully submit that claims 1 and 4 are not anticipated by Midya. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 2 and 3 depend from claim 1, and incorporate the limitations thereof. Claims 5 and 6 likewise depend from claim 1, and incorporate the limitations thereof. The remarks made above with regard to claims 1 and 4 apply equally to their dependent claims, and Applicants respectfully submit that separate arguments need not be presented in support of those dependent claims at this time. Applicants do not concede the correctness of the rejection, and reserve the right to present further arguments.

Claim 7 is rejected under 35 U.S.C. § 103(a) as being obvious from Miya in view of Lai et al. (U.S. Patent No. 5,617,306). Applicants respectfully traverse the rejection.

Claim 7 depends from claim 4, and incorporates the limitations thereof. The remarks made above with regard to claim 4 apply equally to claim 7, and Applicants respectfully submit that separate arguments need not be presented in its support at this time. Applicants do not concede the correctness of the rejection, and reserve the right to present further arguments.

Applicants notes that Lai is relied upon to teach a Cuk or SEPIC converter. However, even if Lai is prior art as categorized, and is suitable for combination with Midya, which points Applicants do not concede, Lai does not remedy the deficiencies of Midya. In particular, Lai also does not disclose or suggest determining a maximum power point based on input characteristics of a converter.

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As all matters raised in the Office Action are now addressed, Applicants believe all pending claims are in condition for immediate allowance. Favorable reconsideration in the form of a Notice of Allowance is respectfully requested.

If a telephone conference would be helpful in resolving any issues concerning this communication, please contact the undersigned at (612) 336-4789, or Applicants' primary attorney-of-record, Michael D. Schumann (Reg. No 30,422) at (612) 336-4638.

Respectfully submitted,



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Date: 12/5/03

A handwritten signature in black ink, appearing to read "Michael L. Lamberty", is written over a horizontal line.

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MDS/MLL